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#10

SEQUENCE LISTING

<110> Oppermann, Herman
Kuberasampath, Thangavel
Rueger, David
Ozkaynak, Engin

<120> Osteogenic Devices

<130> STK-008CN

<140> US 09/754,831
<141> 2001-01-03

<150> US 08/375,901
<151> 1995-01-20

<150> US 08/145,812
<151> 1993-11-01

<150> US 07/995,345
<151> 1992-12-22

<150> US 07/315,342
<151> 1989-02-23

<150> US 07/232,630
<151> 1988-08-15

<150> US 07/179,406
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<170> PatentIn version 3.0

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Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala Cys Cys Val Pro Thr
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Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys Val
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Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly Cys Gly Cys Arg
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn His Ala Xaa Xaa Gln Xaa Xaa
35 40 45

Val Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Pro Xaa Xaa Cys Cys Xaa Pro
50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn His Ala Xaa Xaa Gln Xaa Xaa
35 40 45

Val Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Pro Xaa Xaa Cys Cys Xaa Pro
50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<221> misc_feature
<222> (44)..(44)
<223> wherein Xaa at position 44 is a serine, an alanine or a proline

<220>
<221> misc_feature
<222> (45)..(45)
<223> wherein Xaa at position 45 is a threonine or a serine

<220>
<221> misc_feature
<222> (49)..(49)
<223> wherein Xaa at position 49 is an isoleucine, a valine or a threonine

<220>
<221> misc_feature
<222> (50)..(50)
<223> wherein Xaa at position 50 is a valine, an isoleucine or a leucine

<220>
<221> misc_feature
<222> (52)..(52)
<223> wherein Xaa at position 52 is a threonine or a serine

<220>
<221> misc_feature
<222> (53)..(53)
<223> wherein Xaa at position 53 is a leucine or a isoleucine

<220>
<221> misc_feature
<222> (55)..(55)
<223> wherein Xaa at position 55 is an asparagine, a histidine or an arginine

<220>
<221> misc_feature
<222> (56)..(56)
<223> wherein Xaa at position 56 is a serine, an alanine, a phenylalanine or an asparagine

<220>
<221> misc_feature
<222> (57)..(57)
<223> wherein Xaa at position 57 is a valine or an isoleucine

<220>
<221> misc_feature

<222> (59)..(59)
<223> wherein Xaa at position 59 is a serine or a proline

<220>
<221> misc_feature
<222> (60)..(60)
<223> wherein Xaa at position 60 is a glycine or a glutamic acid

<220>
<221> misc_feature
<222> (61)..(61)
<223> wherein Xaa at position 61 is a lysine, a glutamine, a threonine or a serine

<220>
<221> misc_feature
<222> (62)..(62)
<223> wherein Xaa at position 62 is an isoleucine or a valine

<220>
<221> misc_feature
<222> (64)..(64)
<223> wherein Xaa at position 64 is a lysine or a glutamic acid

<220>
<221> misc_feature
<222> (65)..(65)
<223> wherein Xaa at position 65 is an alanine, a proline or a serine

<220>
<221> misc_feature
<222> (68)..(68)
<223> wherein Xaa at position 68 is a valine or an alanine

<220>
<221> misc_feature
<222> (70)..(70)
<223> wherein Xaa at position 70 is a threonine or a glutamic acid

<220>
<221> misc_feature
<222> (71)..(71)
<223> wherein Xaa at position 71 is a glutamic acid, a glutamine or a lysine

<220>
<221> misc_feature
<222> (72)..(72)
<223> wherein Xaa at position 72 is a leucine or a methionine

<220>
<221> misc_feature
<222> (73)..(73)
<223> wherein Xaa at position 73 is a serine, an asparagine or an aspartic acid

<220>

<221> misc_feature
<222> (74)..(74)
<223> wherein Xaa at position 74 is an alanine, a serine or a proline

<220>
<221> misc_feature
<222> (75)..(75)
<223> wherein Xaa at position 75 is an isoleucine, a leucine or a valine

<220>
<221> misc_feature
<222> (76)..(76)
<223> wherein Xaa at position 76 is a serine or an alanine

<220>
<221> misc_feature
<222> (77)..(77)
<223> wherein Xaa at position 77 is a methionine, a valine or an isoleucine

<220>
<221> misc_feature
<222> (79)..(79)
<223> wherein Xaa at position 79 is a phenylalanine or a tyrosine

<220>
<221> misc_feature
<222> (80)..(80)
<223> wherein Xaa at position 80 is a leucine, a tyrosine or a phenylalanine

<220>
<221> misc_feature
<222> (81)..(81)
<223> wherein Xaa at position 81 is an aspartic acid or an asparagine

<220>
<221> misc_feature
<222> (82)..(82)
<223> wherein Xaa at position 82 is a glutamic acid, an asparagine or an aspartic acid

<220>
<221> misc_feature
<222> (83)..(83)
<223> wherein Xaa at position 83 is a glutamine or an asparagine

<220>
<221> misc_feature
<222> (84)..(84)
<223> wherein Xaa at position 84 is a glutamic acid, a glutamine, a serine or a lysine

<220>
<221> misc_feature
<222> (85)..(85)
<223> wherein Xaa at position 85 is an asparagine or a lysine

<220>

<221> misc_feature
<222> (87)..(87)
<223> wherein Xaa at position 87 is a valine or an isoleucine

<220>
<221> misc_feature
<222> (89)..(89)
<223> wherein Xaa at position 89 is a lysine or an arginine

<220>
<221> misc_feature
<222> (90)..(90)
<223> wherein Xaa at position 90 is an asparagine, a lysine or a histidine

<220>
<221> misc_feature
<222> (92)..(92)
<223> wherein Xaa at position 92 is a glutamine, a glutamic acid, an arginine or a proline

<220>
<221> misc_feature
<222> (93)..(93)
<223> wherein Xaa at position 93 is an aspartic acid, a glutamic acid or an asparagine

<220>
<221> misc_feature
<222> (95)..(95)
<223> wherein Xaa at position 95 is a valine or a threonine

<220>
<221> misc_feature
<222> (97)..(97)
<223> wherein Xaa at position 97 is a glutamic acid, an aspartic acid or an arginine

<220>
<221> misc_feature
<222> (98)..(98)
<223> wherein Xaa at position 98 is a glycine, an alanine, a serine or a glutamic acid

<220>
<221> misc_feature
<222> (100)..(100)
<223> wherein Xaa at position 100 is a glycine or a histidine

<220>
<221> misc_feature
<222> (102)..(102)
<223> wherein Xaa at position 102 is a an arginine or a histidine

<400> 6

Cys Xaa Arg Xaa Xaa Leu Xaa Val Xaa Phe Xaa Asp Xaa Gly Trp Xaa
1 5 10 15

Xaa Trp Xaa Xaa Xaa Pro Xaa Gly Xaa Xaa Ala Xaa Tyr Cys Xaa Gly
            20   25   30

Xaa Cys Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn His Ala
        35   40   45

Xaa Xaa Gln Xaa Xaa Val Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Pro Xaa
    50   55   60

Xaa Cys Cys Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Xaa Xaa
65   70   75   80

Xaa Xaa Xaa Xaa Xaa Val Xaa Leu Xaa Xaa Tyr Xaa Xaa Met Xaa Val
                85   90   95

Xaa Xaa Cys Xaa Cys Xaa
            100

<210> 7
<211> 102
<212> PRT
<213> Xenopus sp.

<220>
<223> Vg1 protein sequence with osteogenic activity

<400> 7

Cys Lys Lys Arg His Leu Tyr Val Glu Phe Lys Asp Val Gly Trp Gln
1   5   10   15

Asn Trp Val Ile Ala Pro Gln Gly Tyr Met Ala Asn Tyr Cys Tyr Gly
            20   25   30

Glu Cys Pro Tyr Pro Leu Thr Glu Ile Leu Asn Gly Ser Asn His Ala
        35   40   45

Ile Leu Gln Thr Leu Val His Ser Ile Glu Pro Glu Asp Ile Pro Leu
    50   55   60

Pro Cys Cys Val Pro Thr Lys Met Ser Pro Ile Ser Met Leu Phe Tyr
65   70   75   80

Asp Asn Asn Asp Asn Val Val Leu Arg His Tyr Glu Asn Met Ala Val
                85   90   95

Asp Glu Cys Gly Cys Arg
            100

<210> 8
<211> 102
<212> PRT
<213> Drosophila sp.

<220>
<223> DPP protein sequence with osteogenic activity

<400> 8

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asp
1 5 10 15

Asp Trp Ile Val Ala Pro Leu Gly Tyr Asp Ala Tyr Tyr Cys His Gly
20 25 30

Lys Cys Pro Phe Pro Leu Ala Asp His Phe Asn Ser Thr Asn His Ala
35 40 45

Val Val Gln Thr Leu Val Asn Asn Asn Asn Pro Gly Lys Val Pro Lys
50 55 60

Ala Cys Cys Val Pro Thr Gln Leu Asp Ser Val Ala Met Leu Tyr Leu
65 70 75 80

Asn Asp Gln Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val
85 90 95

Val Gly Cys Gly Cys Arg
100

<210> 9
<211> 107
<212> PRT
<213> mammalian

<220>
<223> OP1 protein sequence with osteogenic activity

<400> 9

His Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg
1 5 10 15

Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala
20 25 30

Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn
35 40 45

Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro
50 55 60

Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile
65 70 75 80

Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr
85 90 95

Arg Asn Met Val Val Arg Ala Cys Gly Cys His
100 105

<210> 10
<211> 103

<212> PRT
<213> mammalian

<220>
<223> CBP-2a protein sequence with osteogenic activity

<400> 10

Cys Lys Arg His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly
20 25 30

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Tyr
65 70 75 80

Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val
85 90 95

Val Glu Gly Cys Gly Cys Arg
100

<210> 11
<211> 100
<212> PRT
<213> mammalian

<220>
<223> CBMP-2b protein sequence with osteogenic activity

<400> 11

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly
20 25 30

Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ile Pro Lys Ala Cys
50 55 60

Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu
65 70 75 80

Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly
85 90 95

Cys Gly Cys Arg
100

<210> 12
<211> 103
<212> PRT
<213> mammalian

<220>
<223> CBMP-3 protein sequence with osteogenic activity

<400> 12

Cys Ala Arg Arg Tyr Leu Lys Val Asp Phe Ala Asp Ile Gly Trp Ser
1 5 10 15

Glu Trp Ile Ile Ser Pro Lys Ser Phe Asp Ala Tyr Tyr Cys Ser Gly
20 25 30

Ala Cys Gln Phe Pro Met Pro Lys Ser Leu Lys Pro Ser Asn His Ala
35 40 45

Thr Ile Gln Ser Ile Val Arg Ala Val Gly Val Val Pro Gly Ile Pro
50 55 60

Glu Pro Cys Cys Val Pro Glu Lys Met Ser Ser Leu Ser Ile Leu Phe
65 70 75 80

Phe Asp Glu Asn Lys Asn Val Val Leu Lys Val Tyr Pro Asn Met Thr
85 90 95

Val Glu Ser Cys Ala Cys Arg
100

<210> 13
<211> 98
<212> PRT
<213> Artificial Sequence

<220>
<223> Biosynthetic COP1 protein with osteogenic activity

<400> 13

Leu Tyr Val Asp Phe Gln Arg Asp Val Gly Trp Asp Asp Trp Ile Ile
1 5 10 15

Ala Pro Val Asp Phe Asp Ala Tyr Tyr Cys Ser Gly Ala Cys Gln Phe
20 25 30

Pro Ser Ala Asp His Phe Asn Ser Thr Asn His Ala Val Val Gln Thr
35 40 45

Leu Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys Pro Cys Cys Val
50 55 60

Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Ser

65 70 75 80

Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val Val Gly Cys Gly
85 90 95

Cys Arg

<210> 14
<211> 98
<212> PRT
<213> Artificial Sequence

<220>
<223> Biosynthetic COP3 protein with osteogenic activity

<400> 14

Leu Tyr Val Asp Phe Gln Arg Asp Val Gly Trp Asp Asp Trp Ile Val
1 5 10 15

Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys Ser Gly Ala Cys Gln Phe
20 25 30

Pro Ser Ala Asp His Phe Asn Ser Thr Asn His Ala Val Val Gln Thr
35 40 45

Leu Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys Pro Cys Cys Val
50 55 60

Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu
65 70 75 80

Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly Cys Gly
85 90 95

Cys Arg

<210> 15
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> Biosynthetic COP4 protein with osteogenic activity

<400> 15

Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asp Asp Trp Ile Val Ala
1 5 10 15

Pro Pro Gly Tyr Gln Ala Phe Tyr Cys Ser Gly Ala Cys Gln Phe Pro
20 25 30

Ser Ala Asp His Phe Asn Ser Thr Asn His Ala Val Val Gln Thr Leu
35 40 45

Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys Pro Cys Cys Val Pro
50 55 60

Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys
65 70 75 80

Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly Cys Gly Cys
85 90 95

Arg

<210> 16
<211> 97
<212> PRT
<213> Artificial Sequence

<220>
<223> Biosynhetic COP16 protein with osteogenic activity

<400> 16

Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asp Asp Trp Ile Val Ala
1 5 10 15

Pro Pro Gly Tyr Gln Ala Phe Tyr Cys Ser Gly Ala Cys Gln Phe Pro
20 25 30

Ser Ala Asp His Phe Asn Ser Thr Asn His Ala Val Val Gln Thr Leu
35 40 45

Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys Pro Cys Cys Val Pro
50 55 60

Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys
65 70 75 80

Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly Cys Gly Cys
85 90 95

Arg

<210> 17
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 17

Ser Phe Asp Ala Tyr Tyr Cys Ser Gly Ala Cys Gln Phe Pro Met Pro
1 5 10 15

Lys

<210> 18
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 18

Ser Leu Lys Pro Ser Asn Tyr Ala Thr Ile Gln Ser Ile Val
1 5 10

<210> 19
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 19

Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu
1 5 10 15

Asp Glu Asn Glu Lys
20

<210> 20
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 20

Met Ser Ser Leu Ser Ile Leu Phe Phe Asp Glu Asn Lys
1 5 10

<210> 21
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 21

Ser Gln Glu Leu Tyr Val Asp Phe Gln Arg
1 5 10

<210> 22
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 22

Phe Leu His Cys Gln Phe Ser Glu Arg Asn Ser
1 5 10

<210> 23
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 23

Thr Val Gly Gln Leu Asn Glu Gln Ser Ser Glu Pro Asn Ile Tyr
1 5 10 15

<210> 24
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 24

Leu Tyr Asp Pro Met Val Val
1 5

<210> 25
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 25

Val Gly Val Val Pro Gly Ile Pro Glu Pro Cys Cys Val Pro Glu
1 5 10 15

<210> 26
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 26

Val Asp Phe Ala Asp Ile Gly
1 5

<210> 27
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 27

Val Pro Lys Pro Cys Cys Ala Pro Thr
1 5

<210> 28
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 28

Ile Asn Ile Ala Asn Tyr Leu
1 5

<210> 29
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 29

Asp Asn His Val Leu Thr Met Phe Pro Ile Ala Ile Asn
1 5 10

<210> 30
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>

<221> misc_feature
<222> (15)..(15)
<223> wherein Xaa at position 15 is any amino acid

<400> 30

Asp Glu Gln Thr Leu Lys Lys Ala Arg Arg Lys Gln Trp Ile Xaa Pro
1 5 10 15

<210> 31
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (4)..(4)
<223> wherein Xaa at position 4 is any amino acid

<220>
<221> misc_feature
<222> (10)..(10)
<223> wherein Xaa at position 10 is any amino acid

<400> 31

Asp Ile Gly Xaa Ser Glu Trp Ile Ile Xaa Pro
1 5 10

<210> 32
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (15)..(16)
<223> wherein Xaa at positions 15 and 16 is any amino acid

<400> 32

Ser Ile Val Arg Ala Val Gly Val Pro Gly Ile Pro Glu Pro Xaa Xaa
1 5 10 15

Val

<210> 33
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (2)..(2)
<223> wherein Xaa at position 2 is any amino acid

<400> 33

Asp Xaa Ile Val Ala Pro Pro Gln Tyr His Ala Phe Tyr
1 5 10

<210> 34
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<400> 34

Asp Glu Asn Lys Asn Val Val Leu Lys Val Tyr Pro Asn Met Thr Val
1 5 10 15

Glu

<210> 35
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (13)..(13)
<223> wherein Xaa at position 13 is any amino acid

<220>
<221> misc_feature
<222> (16)..(16)
<223> wherein Xaa at position 16 is any amino acid

<400> 35

Ser Gln Thr Leu Gln Phe Asp Glu Gln Thr Leu Lys Xaa Ala Arg Xaa
1 5 10 15

Lys Gln

<210> 36
<211> 24

<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (19)..(19)
<223> wherein Xaa at position 19 is any amino acid

<400> 36

Asp Glu Gln Thr Leu Lys Lys Ala Arg Arg Lys Gln Trp Ile Glu Pro
1 5 10 15

Arg Asn Xaa Ala Arg Arg Tyr Leu
20

<210> 37
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (12)..(12)
<223> wherein Xaa at position 12 is any amino acid

<220>
<221> misc_feature
<222> (14)..(14)
<223> wherein Xaa at position 14 is any amino acid

<220>
<221> misc_feature
<222> (17)..(18)
<223> wherein Xaa at positions 17-18 is any amino acid

<400> 37

Ala Arg Arg Lys Gln Trp Ile Glu Pro Arg Asn Xaa Ala Xaa Arg Tyr
1 5 10 15

Xaa Xaa Val Asp
20

<210> 38
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide fragment

<220>
<221> misc_feature
<222> (2)..(2)
<223> wherein Xaa at position 2 is any amino acid

<220>
<221> misc_feature
<222> (8)..(8)
<223> wherein Xaa at position 8 is any amino acid

<220>
<221> misc_feature
<222> (10)..(10)
<223> wherein Xaa at position 10 is any amino acid

<220>
<221> misc_feature
<222> (12)..(13)
<223> wherein Xaa at positions 12-13 is any amino acid

<220>
<221> misc_feature
<222> (19)..(19)
<223> wherein Xaa at position 19 is any amino acid

<220>
<221> misc_feature
<222> (21)..(22)
<223> wherein Xaa at positions 21-22 is any amino acid

<400> 38

Arg Xaa Gln Trp Ile Glu Pro Xaa Asn Xaa Ala Xaa Xaa Tyr Leu Lys
1 5 10 15

Val Asp Xaa Ala Xaa Xaa Gly
20

<210> 39
<211> 97
<212> PRT
<213> mammalian

<220>
<223> OP1 shorter sequence capable of inducing endochondral bone formation

<400> 39

Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala
1 5 10 15

Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro
20 25 30

Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu
35 40 45

Val His Phe Ile Asn Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro
50 55 60

Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn
65 70 75 80

Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys
85 90 95

His

<210> 40
<211> 4805
<212> DNA
<213> mammalian

<220>
<223> genomic sequence of OP1

<220>
<221> misc_feature
<223> approximately 1000 bases are missing between position 1883 and 188

<400> 40
ggaggtatag gagctctctt cgattttagc aaaccaggag tccgaagatc taaggagagc 60

tgggggtttg actccgagag ctcgagcagt ccccaagacc tggtcttgac tcacgagtta 120

gactccactc agaggctgac tgtctccagg gtctacacct ctaagggcga cactgggctc 180

aagcagactg ccgttttcta tatgggatga gccttcacag ggcagccagt tgggatgggt 240

tgaggtttgg ctgtagacat cagaaaccca agtcaaatgc gcttcaacca gtagaaaatt 300

caccagcccg cagagctaag gttgggtgga cattagggtt ggttgatcca ggagctcaac 360

agtgtcctct gagccccagc tccttctgcc ccaccccacc atcttcagtg ctgcttcctc 420

tcaaggccac agctgtagtt ggccaggggg gcttcattat tttttgctcc tgggcagtag 480

gaggaagaga atgaatgtct ctccatgggt ctttcttagg aatgtgggaa ctttttccag 540

aagtctctat gtcttttagt ttgtgttggg tcacttgccc ttcctgaacc acttcctgac 600

tcctggacag gatgtgcact gatgagctta gctttgggga tctaatagtg actttacaaa 660

gcctctttga gaaggtgaca ttggaaccaa ggcttgagca gacacaacaa agattgcagg 720

gaggggcatt gcaggtggag gaaacggcac atgcaagagc cctgcgtggg agtgagcttg 780

gtgtttggtc aatcagttgt cagagcacac cgggccctgt cagcaggcac agcctgggcc 840

tgctctgagt atgacagaga gcccctggga agttgtaggt ggaggaaaga caggtcatga 900

ctaggaaaaa agcaatccct ctgttgtggg gtggaaggaa ggttgcagtg tgtgtgagag 960

agagacaaga cagacagaca gacacttctc aatgtttaca agtgctcagg ccctgacccg 1020

aatgcttcca aatttacgta gttctggaaa acccccctgta tcattttcac tactcaaaga 1080

aacctcggga gtgttttctt ctgaaaggtc atcaggtttt gactctctgc tgtctcattt 1140

cttcttgctg gtggtggtga tggttgcttg tcccaggccc tgtcccgcat cctcttgccc 1200

ctgcagaggg atgagtgtgt tggggcctca cgagttgagg ttgttcataa gcagatctct 1260

ttgagcaggg cgcctgcagt ggccttgtgt gaggctggag gggtttcgat tcccttatgg 1320

aatccaggca gatgtagcat ttaaacaaca cacgtgtata aaagaaacca gtgtccgcag 1380

aaggttccag aaagtattat gggataagac tacatgagag aggaatgggg cattggcacc 1440

tcccttagta gggcctttgc tgggggtaga aatgagtttt aaggcaggtt agaccctcga 1500

actggctttt gaatcgggaa atttaccccc cagccgttct gtgcttcatt gctgttcaca 1560

tcactgccta agatggagga actttgatgt gtgtgtgttt ctttctcctc actgggctct 1620

gcttcttcac ttccttgtca atgcagagaa cagcagcagg caccagaggc aggccttgta 1680

agaagcacga gctgtatgtc agcttccgag acctgggctg gcaggtaagg ggctggctgg 1740

gtctgtcttg ggtgtgggcc ctctggcgtg ggctcccaca ggcagcgggt gctgtgctca 1800

gtcttgtttc tcatctctgc cagttaagac tccagtatca agtggcctcg ctagggaagg 1860

gtacttggct aaggatacag gggggagcca gcatgggtga tgccattatg agttattagc 1920

ctctctggca ggtgggcaaa ccgaggcatg gaggtttgtt taaggtgaac tgccagtgtg 1980

tgaccaccta gtggggtaga gctgatgatt gcctcacacc ggagctcctt cctgtgccgc 2040

gttctgtcca gaagacacag ccatggatgt ccattttagg atcagccaag ccccgtcttg 2100

tccttcattt ttattttatg ttttttttaga aatggggtct tgctctgtca cccaggctgg 2160

gtgcagtggt gtgatcatag ctcaccgcag ctttgacgcc gtcttcccac tcagtctact 2220

aagcttggac tataggccaa gactatagag tggtccttct ttccattctt ttgggaccat 2280

gagaggccac ccatgtttcc tgcccctgct gggccctgct gctcagaagg catggtctga 2340

ggctttcacc ttggtcgtga gccttcgtgg tggtttcttt cagcatgggg ttgggatgct 2400

gtgctcaggc ttctgcatgg tttcccacac tctcttctcc tcctcaggac tggatcatcg 2460

cgcctgaagg ctacgcgcgc tactactgtg agggggagtg tgccttccct ctgaactcct 2520

acatgaacgc caccaaccac gccatcgtgc agacgctggt gggtgtcacg ccatcttggg 2580

gtgtggtcac ctgggccggg caggctgcgg ggccaccaga tcctgctgcc tccaagctgg 2640

ggcctgagta gatgtcagcc cattgccatg tcatgacttt tgggggcccc ttgcgccgtt 2700

aaaaaaaaat caaaaattgt actttatgac tggtttggta taaagaggag tataatcttc 2760

gaccctggag ttcatttatt tctcctaatt tttaaagtaa ctaaaagttg tatgggctcc 2820

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tttcaagtta aatttcagtc gggtcaccag gaagattcca tgtgataatg agattaacgt 3060

gcccagtcac ggcgacactc agtaggtgtt attcctgctc tgccaacagc aaccatagtt 3120

gataagagct gttagggatt ttgtcctttt gcttagaatc caaggttcaa ggaccttggt 3180

tatgtagctc cctgtcatga acatcatctg agcctttcct gcctactgat catccaccct 3240

gccttgaatg cttctagtga cagagagctc actaccagga ctactccctc ctttcattta 3300

gtaatctgcc tccttctttt cttgtccctg tcctgtgtgt taagtcctgg agaaaaatct 3360

catctatccc tttcatttga ttctgctctt tgagggcagg ggtttttgtt tctttgtttg 3420

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aactgtcttc tagagagtcc tgatgaaatg cttccagagg aaatgagctg atggctggaa 3840

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gaaattgtcc atcataaaat gtgtaaaaag catgctggcc tatgtcagca gtcacagcct 3960

ggaggtggta acagagtgcc agtcactgat gctcaagcct ggcacctaca gttgctggaa 4020

acccagaagt ttcacgttga aaacaacagg acagtggaat ctctggccct gtcttgaaca 4080

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tcttccctta gtttgcttag tccccgctat tccctattgt cttacctcgg tctattttgc 4200

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cagggacact attcagcaat ctacagtgca cagggcagtt ccccaacaga gaattacctg 4380

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tttgttcccc ttgtctgcaa aacagggata atcccagaac tgagttgtcc atgtaaagtg 4500

cttagaacag ggagtgcttg gcttggggag tgtcacctgc agtcattcat tatgcccaga 4560

caggatgttt ctttatagaa acgtggaggc cagttagaac gactcaccgc ttctcaccac 4620

tgcccatgtt ttggtgtgtg tttcaggtcc acttcatcaa cccggaaacg gtgcccaagc 4680

cctgctgtgc gcccacgcag ctcaatgcca tctccgtcct ctacttcgat gacagctcca 4740

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tccga 4805

<210> 41
<211> 314
<212> DNA
<213> Artificial Sequence

<220>
<223> consensus probe for OP1

<400> 41
gatcctaatg ggctgtacgt ggacttccag cgcgacgtgg gctgggacga ctggatcatc 60

gcccccgtcg acttcgacgc ctactactgc tccggagcct gccagttccc ctctgcggat 120

cacttcaaca gcaccaacca cgccgtggtg cagaccctgg tgaacaacat gaaccccggc 180

aaggtaccca agccctgctg cgtgcccacc gagctgtccg ccatcagcat gctgtacctg 240

gacgagaatt ccaccgtggt gctgaagaac taccaggaga tgaccgtggt gggctgcggc 300

tgccgctaac tgca 314

<210> 42
<211> 314
<212> DNA
<213> mammalian

<220>
<223> OP1

<400> 42
tgtaagaagc acgagctgta tgtcagcttc cgagacctgg gctggcagga ctggatcatc 60

gcgcctgaag gctacgcgcg ctactactgt gaggggggagt gtgccttccc tctgaactcc 120

tacatgaacg ccaccaacca cgccatcgtg cagacgctgg tccacttcat caacccggaa 180

acggtgccca agccctgctg tgcgcccacg cagctcaatg ccatctccgt cctctacttc 240

```
gatgacagct ccaacgtcat cctgaagaaa tacagaaaca tggtggtccg ggcctgtggc    300

tgccactagc tcct                                                      314


<210>  43
<211>  315
<212>  DNA
<213>  Artificial Sequence

<220>
<221>  CDS
<222>  (1)..(306)
<223>  COPO

<400>  43
gat cct aat ggg ctg tac gtg gac ttc cag cgc gac gtg ggc tgg gac       48
Asp Pro Asn Gly Leu Tyr Val Asp Phe Gln Arg Asp Val Gly Trp Asp
1               5                   10                  15

gac tgg atc atc gcc ccc gtc gac ttc gac gcc tac tac tgc tcc gga       96
Asp Trp Ile Ile Ala Pro Val Asp Phe Asp Ala Tyr Tyr Cys Ser Gly
            20                  25                  30

gcc tgc cag ttc ccc tct gcg gat cac ttc aac agc acc aac cac gcc      144
Ala Cys Gln Phe Pro Ser Ala Asp His Phe Asn Ser Thr Asn His Ala
        35                  40                  45

gtg gtg cag acc ctg gtg aac aac atg aac ccc ggc aag gta ccc aag      192
Val Val Gln Thr Leu Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys
    50                  55                  60

ccc tgc tgc gtg ccc acc gag ctg tcc gcc atc agc atg ctg tac ctg      240
Pro Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu
65                  70                  75                  80

gac gag aat tcc acc gtg gtg ctg aag aac tac cag gag atg acc gtg      288
Asp Glu Asn Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val
                85                  90                  95

gtg ggc tgc ggc tgc cgc taactgcag                                   315
Val Gly Cys Gly Cys Arg
            100


<210>  44
<211>  102
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  COPO

<400>  44

Asp Pro Asn Gly Leu Tyr Val Asp Phe Gln Arg Asp Val Gly Trp Asp
```

1 5 10 15

Asp Trp Ile Ile Ala Pro Val Asp Phe Asp Ala Tyr Tyr Cys Ser Gly
20 25 30

Ala Cys Gln Phe Pro Ser Ala Asp His Phe Asn Ser Thr Asn His Ala
35 40 45

Val Val Gln Thr Leu Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys
50 55 60

Pro Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu
65 70 75 80

Asp Glu Asn Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val
85 90 95

Val Gly Cys Gly Cys Arg
100

<210> 45
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Hinge region

<400> 45

Asp Pro Asn Gly
1

<210> 46
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-inhibin-a

<400> 46

Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn
1 5 10 15

Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly
20 25 30

Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe

```
        35                  40                  45

His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe
    50                  55                  60

Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser
65                  70                  75                  80

Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln
                85                  90                  95

Asn Met Ile Val Glu Glu Cys Gly Cys Ser
            100                 105
```

<210> 47
<211> 105
<212> PRT
<213> Artificial Sequence

<220>
<223> beta-inhibin-b

<400> 47

```
Cys Cys Arg Gln Gln Phe Phe Ile Asp Phe Arg Ile Gly Trp Asn Asp
1               5                   10                  15

Trp Ile Ile Ala Pro Thr Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly Ser
            20                  25                  30

Cys Pro Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe His
        35                  40                  45

Thr Ala Val Val Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly Thr
    50                  55                  60

Lys Val Asn Ser Cys Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met
65                  70                  75                  80

Leu Tyr Phe Asp Asp Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn
                85                  90                  95

Met Ile Val Glu Glu Cys Gly Cys Ala
            100                 105
```

<210> 48
<211> 99
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta-1

<400> 48

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Cys Cys Val Arg Gln Leu Tyr Ile Asp Phe Arg Lys Asp Leu Gly Trp
1               5                   10                  15
```

```
Lys Trp Ile His Glu Pro Lys Gly Tyr His Ala Asn Phe Cys Leu Gly
            20                  25                  30

Pro Cys Pro Tyr Ile Trp Ser Leu Leu Asp Thr Gln Tyr Ser Lys Val
        35                  40                  45

Leu Ala Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala Ala Pro Cys
    50                  55                  60

Cys Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr Tyr Val Gly
65                  70                  75                  80

Arg Lys Pro Lys Val Glu Gln Leu Ser Asn Met Ile Val Arg Ser Cys
                85                  90                  95

Lys Cys Ser
```

<210> 49
<211> 99
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta-2

<400> 49

```
Cys Cys Leu Arg Pro Leu Tyr Ile Asp Phe Lys Arg Asp Leu Gly Trp
1               5                   10                  15

Lys Trp Ile His Glu Pro Lys Gly Tyr Asn Ala Asn Phe Cys Ala Gly
            20                  25                  30

Ala Cys Pro Tyr Leu Trp Ser Leu Ser Asp Thr Gln His Ser Arg Val
        35                  40                  45

Leu Ser Leu Tyr Asn Thr Ile Asn Pro Glu Ala Ser Ala Ser Pro Cys
    50                  55                  60

Cys Val Ser Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Ile Gly
65                  70                  75                  80

Lys Thr Pro Lys Ile Glu Gln Leu Ser Asn Met Ile Val Lys Ser Cys
                85                  90                  95

Lys Cys Ser
```

<210> 50
<211> 99
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta-3

<400> 50

Cys Cys Val Arg Pro Leu Tyr Ile Asp Phe Arg Gln Asp Leu Gly Trp
1 5 10 15

Lys Trp Val His Glu Pro Lys Gly Tyr Tyr Ala Asn Phe Cys Ser Gly
20 25 30

Pro Cys Pro Tyr Leu Arg Ser Leu Ala Asp Thr Thr His Ser Thr Val
35 40 45

Leu Gly Leu Tyr Asn Thr Leu Asn Pro Glu Ala Ser Ala Ser Pro Cys
50 55 60

Cys Val Pro Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Val Gly
65 70 75 80

Arg Thr Pro Lys Val Glu Gln Leu Ser Asn Met Val Val Lys Ser Cys
85 90 95

Lys Cys Ser

<210> 51
<211> 99
<212> PRT
<213> Artificial Sequence

<220>
<223> MIS

<400> 51

Cys Ala Leu Arg Glu Leu Ser Val Asp Leu Arg Ala Glu Arg Ser Val
1 5 10 15

Leu Ile Pro Glu Thr Tyr Gln Ala Asn Asn Cys Gln Gly Val Cys Gly
20 25 30

Trp Pro Gln Ser Asp Arg Asn Pro Arg Tyr Gly Asn His Val Val Leu
35 40 45

Leu Leu Lys Met Gln Ala Arg Gly Ala Ala Leu Ala Arg Pro Pro Cys
50 55 60

Cys Val Pro Thr Ala Tyr Ala Gly Lys Leu Leu Ile Ser Leu Ser Glu
65 70 75 80

Glu Arg Ile Ser Ala His His Val Pro Asn Met Val Ala Thr Glu Cys
85 90 95

Gly Cys Arg

<210> 52
<211> 103

<212> PRT
<213> Artificial Sequence

<220>
<223> Alpha-inhibin

<220>
<221> misc_feature
<222> (93)..(93)
<223> wherein Xaa at position 93 is a threonine, a valine or a proline

<400> 52

Cys His Arg Val Ala Leu Asn Ile Ser Phe Gln Glu Leu Gly Trp Glu
1 5 10 15

Arg Trp Ile Val Tyr Pro Pro Ser Phe Ile Phe His Tyr Cys His Gly
20 25 30

Gly Cys Gly Leu His Ile Pro Pro Asn Leu Ser Leu Pro Val Pro Gly
35 40 45

Ala Pro Pro Thr Pro Ala Gln Pro Tyr Ser Leu Leu Pro Gly Ala Gln
50 55 60

Pro Cys Cys Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg
65 70 75 80

Thr Thr Ser Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Xaa Asn Leu Leu
85 90 95

Thr Gln His Cys Ala Cys Ile
100

<210> 53
<211> 861
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (1)..(852)
<223> COP-5 fusion protein

<400> 53
atg aaa gca att ttc gta ctg aaa ggt tca ctg gac aga gat ctg gac 48
Met Lys Ala Ile Phe Val Leu Lys Gly Ser Leu Asp Arg Asp Leu Asp
1 5 10 15

tct cgt ctg gat ctg gac gtt cgt acc gac cac aaa gac ctg tct gat 96
Ser Arg Leu Asp Leu Asp Val Arg Thr Asp His Lys Asp Leu Ser Asp
20 25 30

cac ctg gtt ctg gtc gac ctg gct cgt aac gac ctg gct cgt atc gtt 144
His Leu Val Leu Val Asp Leu Ala Arg Asn Asp Leu Ala Arg Ile Val
35 40 45

```
act ccc ggg tct cgt tac gtt gcg gat ctg gaa ttc atg gct gac aac      192
Thr Pro Gly Ser Arg Tyr Val Ala Asp Leu Glu Phe Met Ala Asp Asn
    50                  55                  60

aaa ttc aac aag gaa cag cag aac gcg ttc tac gag atc ttg cac ctg      240
Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
65                  70                  75                  80

ccg aac ctg aac gaa gag cag cgt aac ggc ttc atc caa agc ttg aag      288
Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
                85                  90                  95

gat gag ccc tct cag tct gcg aat ctg cta gcg gat gcc aag aaa ctg      336
Asp Glu Pro Ser Gln Ser Ala Asn Leu Leu Ala Asp Ala Lys Lys Leu
            100                 105                 110

aac gat gcg cag gca ccg aaa tcg gat cag ggg caa ttc atg gct gac      384
Asn Asp Ala Gln Ala Pro Lys Ser Asp Gln Gly Gln Phe Met Ala Asp
        115                 120                 125

aac aaa ttc aac aag gaa cag cag aac gcg ttc tac gag atc ttg cac      432
Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His
    130                 135                 140

ctg ccg aac ctg aac gaa gag cag cgt aac ggc ttc atc caa agc ttg      480
Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
145                 150                 155                 160

aag gat gag ccc tct cag tct gcg aat ctg cta gcg gat gcc aag aaa      528
Lys Asp Glu Pro Ser Gln Ser Ala Asn Leu Leu Ala Asp Ala Lys Lys
                165                 170                 175

ctg aac gat gcg cag gca ccg aag gat cct aat ggg ctg tac gtc gac      576
Leu Asn Asp Ala Gln Ala Pro Lys Asp Pro Asn Gly Leu Tyr Val Asp
            180                 185                 190

ttc agc gac gtg ggc tgg gac gac tgg att gtg gcc cca cca ggc tac      624
Phe Ser Asp Val Gly Trp Asp Asp Trp Ile Val Ala Pro Pro Gly Tyr
        195                 200                 205

cag gcc ttc tac tgc cat ggc gaa tgc cct ttc ccg cta gcg gat cac      672
Gln Ala Phe Tyr Cys His Gly Glu Cys Pro Phe Pro Leu Ala Asp His
    210                 215                 220

ttc aac agc acc aac cac gcc gtg gtg cag acc ctg gtg aac tct gtc      720
Phe Asn Ser Thr Asn His Ala Val Val Gln Thr Leu Val Asn Ser Val
225                 230                 235                 240

aac tcc aag atc cct aag gct tgc tgc gtg ccc acc gag ctg tcc gcc      768
Asn Ser Lys Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala
                245                 250                 255

atc agc atg ctg tac ctg gac gag aat gag aag gtg gtg ctg aag aac      816
Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn
            260                 265                 270

tac cag gag atg gta gta gag ggc tgc ggc tgc cgc taactgcag            861
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Tyr Gln Glu Met Val Val Glu Gly Cys Gly Cys Arg
275 280

<210> 54
<211> 284
<212> PRT
<213> Artificial Sequence

<220>
<223> COP-5 fusion protein

<400> 54

Met Lys Ala Ile Phe Val Leu Lys Gly Ser Leu Asp Arg Asp Leu Asp
1 5 10 15

Ser Arg Leu Asp Leu Asp Val Arg Thr Asp His Lys Asp Leu Ser Asp
20 25 30

His Leu Val Leu Val Asp Leu Ala Arg Asn Asp Leu Ala Arg Ile Val
35 40 45

Thr Pro Gly Ser Arg Tyr Val Ala Asp Leu Glu Phe Met Ala Asp Asn
50 55 60

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
65 70 75 80

Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
85 90 95

Asp Glu Pro Ser Gln Ser Ala Asn Leu Leu Ala Asp Ala Lys Lys Leu
100 105 110

Asn Asp Ala Gln Ala Pro Lys Ser Asp Gln Gly Gln Phe Met Ala Asp
115 120 125

Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His
130 135 140

Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu
145 150 155 160

Lys Asp Glu Pro Ser Gln Ser Ala Asn Leu Leu Ala Asp Ala Lys Lys
165 170 175

Leu Asn Asp Ala Gln Ala Pro Lys Asp Pro Asn Gly Leu Tyr Val Asp
180 185 190

Phe Ser Asp Val Gly Trp Asp Asp Trp Ile Val Ala Pro Pro Gly Tyr
195 200 205

Gln Ala Phe Tyr Cys His Gly Glu Cys Pro Phe Pro Leu Ala Asp His
210 215 220

Phe Asn Ser Thr Asn His Ala Val Val Gln Thr Leu Val Asn Ser Val
225 230 235 240

Asn Ser Lys Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala
245 250 255

Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn
260 265 270

Tyr Gln Glu Met Val Val Glu Gly Cys Gly Cys Arg
275 280

<210> 55
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> BOP

<400> 55

Ser Phe Asp Ala Tyr Tyr Cys Ser Gly Ala Cys Gln Phe Pro Ser
1 5 10 15

<210> 56
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> DPP

<400> 56

Gly Tyr Asp Ala Tyr Tyr Cys His Gly Lys Cys Pro Phe Phe Leu
1 5 10 15

<210> 57
<211> 15

<212> PRT
<213> Artificial Sequence

<220>
<223> Vg1

<400> 57

Gly Tyr Met Ala Asn Tyr Cys Tyr Gly Glu Cys Pro Tyr Pro Leu
1 5 10 15

<210> 58
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> inhibin

<400> 58

Gly Tyr His Ala Asn Tyr Cys Glu Gly Glu Cys Pro Ser His Ile
1 5 10 15

<210> 59
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta

<400> 59

Gly Tyr His Ala Asn Phe Cys Leu Gly Pro Cys Pro Tyr Ile Trp
1 5 10 15

<210> 60
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> BOP

<400> 60

Lys Arg Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu
1 5 10 15

Tyr Leu Asp Glu Asn
20

<210> 61
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Vg1

<400> 61

Leu Pro Cys Cys Val Pro Thr Lys Met Ser Pro Ile Ser Met Leu Phe
1 5 10 15

Tyr Asp Asn Asn
20

<210> 62
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> inhibin

<400> 62

Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser Met Leu Tyr
1 5 10 15

Tyr Asp Asp Gly
20

<210> 63
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta

<400> 63

Ala Pro Cys Cys Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr
1 5 10 15

Tyr Val Gly

<210> 64
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> DPP

<400> 64

Lys Ala Cys Cys Val Pro Thr Gln Leu Asp Ser Val Ala Met Leu Tyr
1 5 10 15

Leu Asn Asp Gln
20

<210> 65
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> BOP

<400> 65

Leu Tyr Val Asp Phe
1 5

<210> 66
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> DPP

<400> 66

Leu Tyr Val Asp Phe
1 5

<210> 67
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Vgl

<400> 67

Leu Tyr Val Glu Phe
1 5

<210> 68
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> TGF-beta

<400> 68

Leu Tyr Ile Asp Phe
1 5

<210> 69
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> inhibin

<400> 69

Phe Phe Val Ser Phe
1 5

<210> 70
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal sequence

<400> 70

Cys Lys Arg His Pro
1 5

<210> 71
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal sequence

<400> 71

Cys Arg Arg Lys Gln
1 5

<210> 72
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> N-terminal sequence

<400> 72

Cys Lys Arg His Glu
1 5